

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims**

Claim 1 (currently amended): An ultrasonic diagnostic apparatus for diagnosing vascular endothelial function, said apparatus comprising:

an ultrasonic transmitter for transmitting ultrasonic transmission waves into tissues of living body;

an ultrasonic receiver for receiving an ultrasonic echo from vascular wall in said tissues of living body, said vascular wall having a thickness;

a phase detector for detecting a phase of said ultrasonic echo;

an arithmetic unit for obtaining thickness change between two arbitrary positions among a plurality of positions within said vascular wall from a phase detection signal determined at said phase detector, and for calculating ~~and obtaining~~ elastic modulus of said vascular wall as a function of ~~from~~ ~~said thickness~~, said thickness change and a blood pressure value; and

at least one of a storage unit or a display unit, said storage unit storing changes over time of elastic modulus of said vascular wall when artery is avascularized and the avascularization is then stopped, and said display unit

displaying changes over time of elastic modulus of said vascular wall when artery is avascularized and the avascularization is then stopped.

Claim 2 (currently amended): An ultrasonic diagnostic apparatus for diagnosing vascular endothelial function said apparatus comprising:

an ultrasonic transmitter for transmitting ultrasonic transmission waves into tissues of living body;

an ultrasonic receiver for receiving an ultrasonic echo from vascular wall in said tissues of living body, said vascular wall having a thickness;

a phase detector for detecting a phase of said ultrasonic echo;

an arithmetic unit for obtaining positional displacement of a plurality of positions within said vascular wall from a phase detection signal determined at said phase detector, obtaining thickness change between two arbitrary positions among said plurality of positions from a difference between positional changes of said two positions, and calculating and determining elastic modulus of said vascular wall as a function of ~~from~~ said thickness, said thickness change and a blood pressure value; and

at least one of a storage unit or a display unit, said storage unit storing changes over time of elastic

modulus of said vascular wall when artery is avascularized and the avascularization is then stopped, and said display unit displaying changes over time of elastic modulus of said vascular wall when artery is avascularized and the avascularization is then stopped.

Claim 3 (previously presented): The ultrasonic diagnostic apparatus according to claim 1, wherein said arithmetic unit obtains elastic modulus of the vascular wall including at least a part of tunica media.

Claim 4 (original): The ultrasonic diagnostic apparatus according to claim 3, wherein said arithmetic unit obtains elastic modulus of the vascular wall in tunica intima and tunica media.

Claim 5 (currently amended): An ultrasonic diagnostic method for diagnosing vascular endothelial function by using an ultrasonic diagnostic apparatus, comprising a transmitter/receiver for transmitting and receiving ultrasonic waves, a phase detector for detecting a phase of a received ultrasonic echo, and an arithmetic unit for calculating elastic modulus of vascular wall based on the received ultrasonic echo and obtained through phase detection, wherein said method comprising:

a step (A) of transmitting ultrasonic waves into tissues of living body including vascular wall, and receiving an ultrasonic echo obtained when said ultrasonic waves is reflected and scattered by said vascular wall, said vascular wall having a thickness;

a step (B) of detecting a phase of said ultrasonic echo;

a step (C) of obtaining thickness change between two arbitrary positions among a plurality of positions within said vascular wall from a phase detection signal determined by said phase detector, and calculating ~~and determining~~ elastic modulus of said vascular wall as a ~~from~~ ~~said thickness,~~ said thickness change and a blood pressure value; and

at least one of a step (D) of storing changes over time of elastic modulus of said vascular wall when avascularizing artery and then avascularization is stopped or a step (E) of displaying changes over time of elastic modulus of said vascular wall when avascularizing artery and then avascularization is stopped.

Claim 6 (currently amended): An ultrasonic diagnostic method for diagnosing vascular endothelial function by using an ultrasonic diagnostic apparatus, comprising a transmitter/receiver for transmitting and receiving

ultrasonic waves, a phase detector for detecting a phase of a received ultrasonic echo, and an arithmetic unit for calculating elastic modulus of vascular wall based on the received ultrasonic echo and obtained through phase detection, wherein said method comprising:

    a step (A) of transmitting ultrasonic waves into tissues of living body including vascular wall, and receiving an ultrasonic echo obtained when said ultrasonic waves is reflected and scattered by said vascular wall, said vascular wall having a thickness;

    a step (B) of detecting a phase of said ultrasonic echo;

    a step (C) of obtaining positional displacement of a plurality of positions within said vascular wall from a phase detection signal determined by said phase detector, obtaining thickness change between two arbitrary positions among said plurality of positions from a difference of positional displacement of said two positions, and of calculating and determining elastic modulus of said vascular wall as a function offrom said thickness, said thickness change and a blood pressure value; and

    at least one of a step (D) of storing changes over time of elastic modulus of said vascular wall when avascularizing artery and then avascularization is stopped or a step (E) of displaying changes over time of elastic

modulus of said vascular wall when avascularizing artery and then avascularization is stopped.

Claim 7 (currently amended): The ultrasonic diagnostic method according to claim 5, wherein said step (C) of calculatingdetermining elastic modulus is a step of obtaining elastic modulus of vascular wall including at least a part of tunica media.

Claim 8 (currently amended): The ultrasonic diagnostic method according to claim 7, wherein said step (C) of calculatingdetermining elastic modulus is a step of determining elastic modulus of vascular wall in the region of tunica intima and tunica media.

Claim 9 (previously presented): The ultrasonic diagnostic apparatus according to claim 2, wherein said arithmetic unit obtains elastic modulus of the vascular wall including at least a part of tunica media.

Claim 10 (previously presented): The ultrasonic diagnostic apparatus according to claim 9, wherein said arithmetic unit obtains elastic modulus of the vascular wall in tunica intima and tunica media.

Claim 11 (currently amended): The ultrasonic diagnostic method according to claim 6, wherein said step (C) of calculating~~determining~~ elastic modulus is a step of determining elastic modulus of said vascular wall including at least a part of tunica media.

Claim 12 (currently amended): The ultrasonic diagnostic method according to claim 11, wherein said step (C) of calculating~~determining~~ elastic modulus is a step of determining elastic modulus of said vascular wall in the region of tunica intima and tunica media.